

Following a path less trodden: the new apetalous species
Cryptandra subtilis (Rhamnaceae)

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SHORT COMMUNICATION

One of the obvious characteristics of the family Rhamnaceae is the small size of the petals in comparison with the sepals, which have taken over the primary role of attracting pollinators. In the majority of species, each petal has a hooded apex enclosing an anther, but there are some taxa in which the petals are rudimentary or lacking altogether. Among the approximately 110 native species from Western Australia, four consistently lack petals: *Polianthion biloculare* (A.S. George) Kellermann, *Pomaderris paniculosa* F. Muell ex Reissek, *Siegfriedia darwinioides* C.A. Gardner and the new species of *Cryptandra* Sm. named here. One further species, the appropriately named *C. apetala* Ewart & Jean White, lacks petals (see Figure 1A) in its northern populations but includes variants with very reduced to normal-sized petals in the central and southern parts of its range.

Cryptandra subtilis Rye & Hislop, *sp. nov.*

Type: Buntine Nature Reserve, north of Wubin, Western Australia [precise locality withheld for conservation reasons], 21 August 2019, *M. Hislop* 4796 (*holo:* PERTH 09154477; *iso:* AD, CANB, K, MEL, NSW).

Cryptandra sp. Cowcowing (Wittwer W 1210), Western Australian Herbarium, in *FloraBase*, <https://florabase.dpaw.wa.gov.au/> [accessed 1 September 2018].

Cryptandra apetala var. *apetala* ‘simple-haired variant’: B.L. Rye, *Nuytsia* 10(2): 259 (1995).

Illustration. B.L. Rye, *Nuytsia* 10(2): 258, Figure 1F & G (1995).

Fine-stemmed *shrubs* commonly 0.3–0.4 m high but recorded up to 1 m high, not spinescent; flowering branchlets commonly with 2–5 flowers sometimes all terminal or near-terminal but often with the lowest flower(s) separated somewhat from the rest. *Young stems* rather densely hairy at first with appressed simple hairs up to 0.5 mm long and also with a few, scattered stellate hairs, the somewhat more mature stems with a moderately dense indumentum of simple hairs. *Stipules* connate at base for *c.* 0.1 mm, hiding most of the short petiole from view, 0.6–0.8 mm long, brown, hairy along the keel and ciliate on the margins, glabrous elsewhere, usually acute, with a point less than 0.1 mm

long. *Petioles* 0.05–0.3 mm long. *Leaf blades* narrowly elliptic or narrowly obovate to almost linear in outline, 2–3.5 mm long, 0.4–0.8 mm wide, with recurved to revolute margins hiding much or all of the undersurface from view, with an apical point up to 0.25 mm long; lower surface with a very dense indumentum of white stellate hairs; upper surface with appressed simple hairs up to *c.* 0.3 mm long. *Peduncles* densely stellate-hairy. *Bracts* *c.* 4, similar in size and texture to the stipules, broadly or very broadly ovate, ciliate on margin; outer surface glabrous or with short hairs towards the base. *Flowers* erect, white or cream. *Floral tube* 1–1.3 mm long (enlarging to 2–2.2 mm in fruit), with antrorse to appressed simple hairs up to *c.* 0.5 mm long and smaller stellate hairs; adnate part very densely hairy, 0.5–0.7 mm long; free part 0.5–0.6 mm long, moderately hairy. *Sepals* 0.6–1 mm long, with appressed simple hairs. *Petals* absent. *Disc* with stellate hairs *c.* 0.15 mm long. *Ovary* 3-locular; summit densely hairy. *Style* 0.5–0.6 mm long, glabrous; stigma 3-lobed. *Fruits* *c.* 1/2-inferior, *c.* 2.5 mm long, *c.* 1.7 mm diam. *Seeds* *c.* 2.1 mm long including aril, with a very dark base, pale brown mottled with dark brown above; body *c.* 1.55 mm long; aril *c.* 0.7 mm long, clear-translucent. (Figure 1D–F)

Diagnostic characters. Distinguished from almost all other members of the genus by its lack of petals. Other important characters are the simple hairs on its stems and leaves, the glabrous or largely glabrous bracts, and the prominently mottled seeds.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 19 July 1963, *A. Fairall* 1763 (PERTH); 4 May 1997, *F. Keast* L6D 067 (PERTH); 23 June 1995, *M. Hislop* 35 (PERTH); 17 Aug. 2017, *M. Hislop* 4715 (PERTH); 21 Aug. 2019, *M. Hislop* 4798 (BRI, PERTH); 7 Oct. 2015, *M. Hislop & F. Lewis* MH 4539 (PERTH); 18 June 2001, *F. & J. Hort* 1291 (PERTH); 15 Aug. 1972, *A. Robinson s.n.* (PERTH); 16 June 1974, *Wittwer* W 1210 (PERTH).

Distribution and habitat. Extends from near Latham south-east to Cowcowing and inland to near Lake Moore (Western Australian Herbarium 1998–), growing mainly in yellow sand in open mallee woodland or heath.

Phenology. Flowers mainly from late May to August. Mature fruits recorded in October.

Conservation status. Listed by Smith and Jones (2018) as Priority Three under Conservation Codes for Western Australian Flora, under the name *C. sp.* Cowcowing (Wittwer W 1210). Less than ten localities are known for this poorly collected species, but they include at least three nature reserves and occur over a range of *c.* 150 km.

Etymology. From the Latin *subtilis* (delicate, fine), referring to the fine-stemmed habit.

Vernacular name. No Petals Cryptandra.

Affinities. *Cryptandra subtilis* was informally referred to by Rye (1995: 259) as the ‘simple-haired variant’ of *C. apetala* in view of the moderately long, appressed, simple hairs on the young stems and upper leaf surface; typical specimens of *C. apetala*, which have densely, minutely stellate-hairy young stems and leaves, were called the ‘stellate-haired variant’. At that stage only three specimens of *C. subtilis* had been examined, and since one of these was observed to have some stellate hairs on the stems it was postulated that the ‘simple-haired variant’ was likely to intergrade with the ‘stellate-haired variant’, particularly since the distributions of the two variants overlap. On re-examination, all collections of *C. subtilis*, including five obtained recently, were found to have just a few scattered stellate hairs on the very young stems and a much larger number of simple hairs. *Cryptandra subtilis*

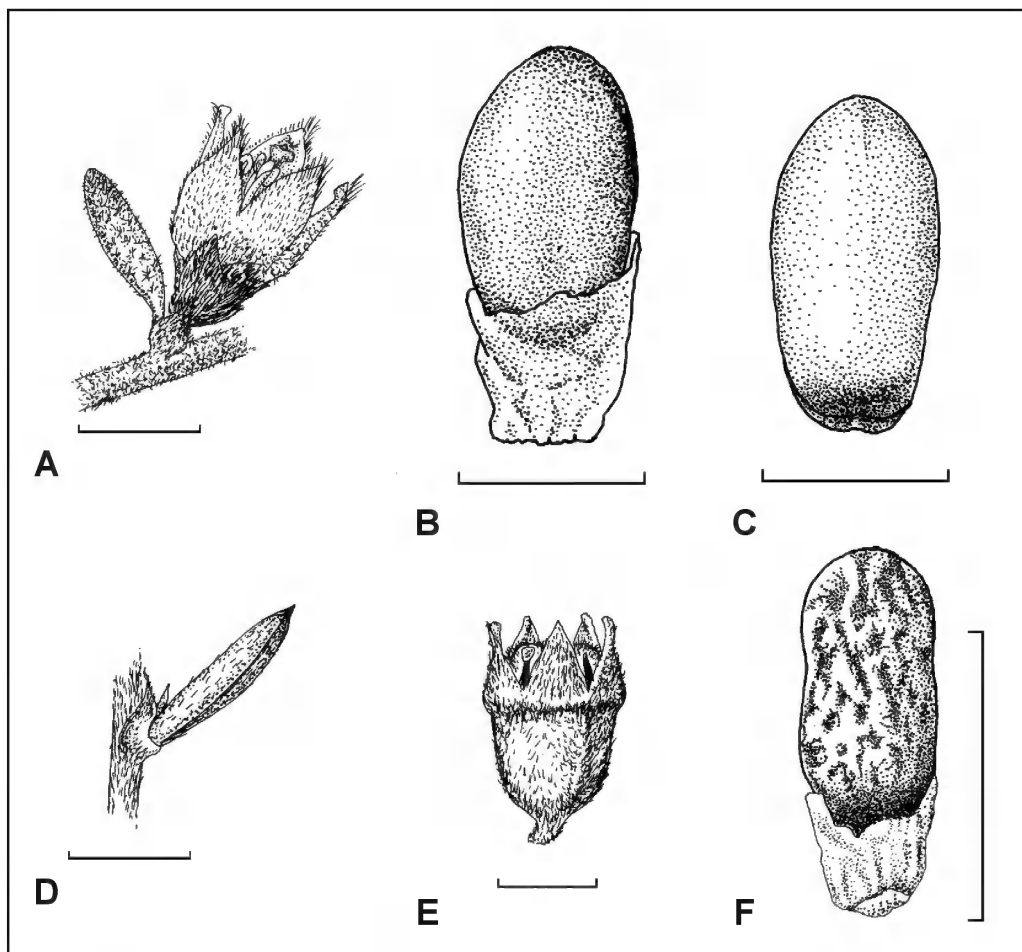


Figure 1. A–C *Cryptandra apetala*. A – stellate-hairy stem and leaf, and apetalous flower; B – seed with aril; C – seed with aril removed. D–F *Cryptandra subtilis*. D – stem and leaf with simple hairs; E – fruit; F – seed with aril. Scale bars = 1 mm. Drawn by Margaret Pieroni from *Y. Chadwick* 1735 (A) and *A. Fairall* 1763 (D, E) and by Skye Coffey from *M. Hislop & F. Lewis* MH 4526 (B, C) and *M. Hislop & F. Lewis* MH 4539 (F).

can be consistently separated from *C. apetala* by its lack of stellate hairs on the upper surface of the leaves, predominance of simple hairs on the stems, fully or partially glabrous outer surface of the bracts, and less densely hairy flowers.

The two species show a large overlap in their distributions and both species have a single, old collection from Cowcowing. They have a different appearance in the field; *C. subtilis* is a more delicate looking plant with a dark green aspect in contrast to the grey-green of *C. apetala*. They also appear to differ significantly in their seeds. The typical seed colouration in *Cryptandra* includes an obviously darkened base; elsewhere the seed surface is uniformly coloured or shows relatively minor variation in colour. Recently collected fruiting material of *C. subtilis* (*M. Hislop & F. Lewis* MH 4539) has revealed that its seeds are prominently mottled (Figure 1F), as is often the case in the related genus *Stenanthemum* Reissek. In contrast, the seeds of *C. apetala* are fairly uniformly golden brown over most of their surface (Figure 1B, C), judging from those observed on two specimens with mature fruits (*M. Hislop & F. Lewis* MH 4526; *G.F. Craig* 8148).

The following two couplets could be added before the numbered couplets at the start of the key to *Cryptandra* in Rye (2007) to accommodate the new species:

- a:** Petals absent
- b:** Upper leaf surface sparsely hairy with moderately long, simple hairs. Bracts glabrous or with much of outer surface glabrous (Latham–Cowcowing–Lake Moore)..... **C. subtilis**
- b:** Upper leaf surface densely, minutely stellate-hairy. Bracts hairy on outer surface (Nerren Nerren Stn–Barker Lake)..... **C. apetala** var. **apetala**
- a:** Petals present

Notes. It is likely that *C. subtilis* is single-stemmed at the base like related species, but this needs confirmation. Further collections in mature fruit are also needed to document any variation in seed characters.

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